DETAILED ACTION

1. This Office action is responsive to Applicant's amendment and response filed on 3-28-2011 has been entered into the record. Claims 1 and 29 are amended. Claims 1, 4-5, 7-9, 11-16, and 18-29 are pending and currently under examination.

Objections/Rejections Withdrawn

2. In view of the Applicant's amendments and remarks the following objections/rejections are withdrawn.

a) Rejection of claims 1, 4-5, 7-9, 11-16, and 29-30 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter) is withdrawn in light of applicants arguments.

b) Rejection of claims 1, 4-5, 7-9, 11-16, and 29-30 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in light of applicants amendment thereto.

c) Rejections of claims 1, 4-5, 7-9, 11-16, and 29-30 under 35 U.S.C. 103(a) as being unpatentable over (Costantino WO 2003/007985 Date January 30, 2003) in view of (Porro et al US Application No. 20060165730 (US Filing Date May 7, 2003)), and (Michon et al US Application 20040213804A1 US Filing Date January 20, 2004 (parent continuation-of 09376911 Date August 18, 1998 is withdrawn in light of applicants arguments thereto.

New Grounds of Rejection

Claim Rejection-35 USC §103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the

inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 4-5, 7-9, 11-16, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Costantino WO 2003/007985 Date January 30, 2003) in view of (Jennings et al 1986 Vol. 137 No. 5 pgs. 1708-1713).

The instant claims are drawn to an immunogenic conjugate comprising a carrier protein, and a group Y meningococcal polysaccharide fragment obtained from an O-acetyl positive group Y meningococcal polysaccharide, wherein the group Y meningococcal polysaccharide fragment has a molecular weight less than 150 kDa and has been O-deacetylated by base hydrolysis by at least 80%; wherein the carrier protein is covalently coupled to the group Y meningococcal polysaccharide fragment through cleaved sialic acid exocyclic side chains of the polysaccharide fragments; wherein the polysaccharide of the conjugate is completely N-aceytlated and wherein the immunogenic conjugate is suitable for use as a vaccine against N. meningitidis infection (claim 1), wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 2.5 kDa to about 100 kDa (claim 4), wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 10 kDa to about 20 kDa (claim 5), wherein the carrier protein is a bacterial toxin or toxoid (claim 7), wherein the bacteria toxin or toxoid is selected from the group consisting of diphtheria, tetanus, pseudomonas, staphylococcus, streptococcus, pertussis and Escherichia coli toxin or toxoid (claim 8), wherein the bacterial toxin or toxoid is tetanus toxin or toxoid (claim 9); a vaccine comprising the immunogenic conjugate (claim 11), wherein the bacterial toxin or toxoid is selected from the group consisting of diphtheria, tetanus, pseudomonas, staphylococcus, streptococcus, meningococcal porin B, pertussis and Escherichia coli toxin or toxoid (claim 12), wherein the bacterial toxin or toxoid is tetanus toxin or toxoid (claim 13), further comprising an adjuvant (claim 14), wherein the adjuvant is aluminum hydroxide (claim 15), wherein the vaccine is adapted for administration by injection (claim 16), wherein the group Y meningococcal polysaccharide fragment is 100% O-deacetylated (claim 29); an immunogenic conjugate comprising a carrier protein, and a polysaccharide, wherein said polysaccharide is selected from

the group consisting of an O-acetyl negative group Y and a fragment of an O-acetyl positive group Y meningococcal polysaccharide, wherein the fragment of an O-acetyl positive group Y meningococcal polysaccharide has a molecular weight in the range of about 5 to about 150 kDa, has been O-deacetylated by at least 80%, and is completely N-acetylated, wherein the carrier protein is covalently coupled to the polysaccharide at the de-O-acetylation sites; and wherein the immunogenic conjugate is suitable for use as a vaccine against N. meningitidis infection (claim 30).

Costantino teach vaccine and immunogenic compositions comprising capsular saccharides from serogroups Y of N. meningitidis, wherein said capsular saccharides are conjugated to carrier protein(s) and/or are oligosaccharides. Constantino et al teach the material obtained (fragment) can be conjugated to a carrier protein and formulated as a vaccine (see abstract, claims). Constantino teach MenY 242975 (OAc-) and 240539 (OAc+)[i.e. O-acetyl positive/negative group Y] (see pg. 19 lines 10-15) ultrafiltered to produce a molecular weight of 30kDa (see pg. 14 lines 1-10 and pg. 15 b and c) which necessarily teach a polysaccharide fragment obtained from an O-acetyl positive group Y meningococcal polysaccharide, wherein the group Y meningococcal polysaccharide fragment has a molecular weight less than 150 kDa and has been O-deacetylated. Constantino et al teach carrier proteins that are bacterial toxins or toxoids, such as diphtheria or tetanus toxoids that can be conjugated to group Y polysaccharide (see pg. 4 lines 15-20). Constantino et al teach a vaccine may include an adjuvant to enhance effectiveness of the composition which include, aluminum salts (alum), and such as aluminum hydroxides (see claims 61-63). Thus the immunogenic conjugate of Constantino necessarily teach O-acetyl positive group Y meningococcal polysaccharide, wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 2.5 kDa to about 100 kDa, wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 10 kDa to about 20 kDa.

The group Y meningococcal polysaccharide fragment that has been O-deacetylated of the prior art is deemed to be the same as the group Y meningococcal polysaccharide fragment by base hydrolysis by at least 80% as claimed which is a Product by Process type claim (see *In re Thorpe*, 227 USPQ 964 (CAFC 1985); *In re Marosi*, 218 USPQ 289, 292-293 (CAFC 1983) and *In re Brown*, 173 USPQ 685 (CCPA 1972)). Consequently, the group Y meningococcal

polysaccharide fragment by base hydrolysis by at least 80% of Constantino et al is product by process because once a reference teaching product appearing to be substantially identical is made on the basis of a rejection and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to Applicants to show a distinction between the material, structural and functional characteristics of the claimed composition and the composition of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). Therefore the group Y meningococcal polysaccharide fragment does not patentably distinguish the claimed invention from the prior art.

Constantino does not teach an immunogenic conjugate, wherein group Y meningococcal polysaccharide fragment is completely N-acetylated.

Jennings et al teach N-deacetylation of a meningococcal polysaccharide (see pg. 1708 Materials and Methods) coupled to a carrier protein (see abstract pg. 1709) which necessarily teach an immunogenic conjugate, wherein the meningococcal polysaccharide fragment is completely N-acetylated.

It would have been prima facie obvious at the time the invention the was made to modify the immunogenic conjugate comprising a protein carrier and group Y meningococcal polysaccharide fragments that have been O-deacetylated as taught by Constantino et al, wherein said polysaccharide fragments are completely N-acetylated by the N-acetylated process as taught by Jennings et al because the N-acetylated process allows the carboxylate and N-carbonyl groups of sialic acid residues of a polysaccharide to remain intact in an immunogenic conjugate in order to take advantage of inducing high levels of specific IgG antibodies (see Jennings et al abstract). KSR forcloses the argument that a specific teaching, suggestion, or motivation is required to support a finding a obviousness. See the recent Board Decision Ex parte Smith, --USPQ2d--, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007 (citing KSR, 82 USPQ2d at 1396) available at (**http://www.uspto.gov/web/offices/dcom/bpai/prec/fd071925.pdf**).

As to claims 1 and 16, to the limitation "use as a vaccine against N. meningitidis infection", "wherein the vaccine is adapted for administration by injection", said recitations are considered an intended use and thus is given no patentable weight on the conjugate. Therefore the claims are drawn to a conjugate.

One would have reasonable expectation of success because O-acetyl positive group Y meningococcal polysaccharide from Neisseria meningitides group type Y polysaccharide to produce an immunogenic conjugate is well known in the art.

4. Claims 1, 4-5, 7-9, 11-16, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Chong et al WO 1999/42130 Date February 23, 1999) in view of (Jennings et al 1986 Vol. 137 No. 5 pgs. 1708-1713).

The instant claims are drawn to an immunogenic conjugate comprising a carrier protein, and a group Y meningococcal polysaccharide fragment obtained from an O-acetyl positive group Y meningococcal polysaccharide, wherein the group Y meningococcal polysaccharide fragment has a molecular weight less than 150 kDa and has been O-deacetylated by base hydrolysis by at least 80%; wherein the carrier protein is covalently coupled to the group Y meningococcal polysaccharide fragment through cleaved sialic acid exocyclic side chains of the polysaccharide fragments; wherein the polysaccharide of the conjugate is completely N-aceytlated and wherein the immunogenic conjugate is suitable for use as a vaccine against N. meningitidis infection (claim 1), wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 2.5 kDa to about 100 kDa (claim 4), wherein the group Y meningococcal polysaccharide fragment has a molecular weight from about 10 kDa to about 20 kDa (claim 5), wherein the carrier protein is a bacterial toxin or toxoid (claim 7), wherein the bacteria toxin or toxoid is selected from the group consisting of diphtheria, tetanus, pseudomonas, staphylococcus, streptococcus, pertussis and Escherichia coli toxin or toxoid (claim 8), wherein the bacterial toxin or toxoid is tetanus toxin or toxoid (claim 9); a vaccine comprising the immunogenic conjugate (claim 11), wherein the bacterial toxin or toxoid is selected from the group consisting of diphtheria, tetanus, pseudomonas, staphylococcus, streptococcus, meningococcal porin B, pertussis and Escherichia coli toxin or toxoid (claim 12), wherein the bacterial toxin or toxoid is tetanus toxin or toxoid (claim 13), further comprising an adjuvant (claim 14), wherein the adjuvant is aluminum hydroxide (claim 15), wherein the vaccine is adapted for administration by injection (claim 16), wherein the group Y meningococcal polysaccharide fragment is 100% O-deacetylated (claim 29); an immunogenic conjugate comprising a carrier protein, and a polysaccharide, wherein said polysaccharide is selected from

the group consisting of an O-acetyl negative group Y and a fragment of an O-acetyl positive group Y meningococcal polysaccharide, wherein the fragment of an O-acetyl positive group Y meningococcal polysaccharide has a molecular weight in the range of about 5 to about 150 kDa, has been O-deacetylated by at least 80%, and is completely N-acetylated, wherein the carrier protein is covalently coupled to the polysaccharide at the de-O-acetylation sites; and wherein the immunogenic conjugate is suitable for use as a vaccine against N. meningitidis infection (claim 30).

Chong et al teach multivalent immunogenic molecules which comprise capsular oligosaccharide fragment from group Y meningococcal polysaccharide (see abstract) conjugated to a carrier protein (see pg. 19), wherein meningococcal polysaccharides undergo de-acetylation resulting in 100% de-acetylation and N-acetylation (see pg. 39). Chong et al teach the preparation of oligosaccharides with a molecular mass ranging from 2.5 to 5.0 kDa which can be subjected to a novel glycoconjugation technology to prepare glycoconjugates containing multiple-oligosaccharides covalently linked to a carrier protein (see example 3).

The group Y meningococcal polysaccharide fragment that has been O-deacetylated of the prior art is deemed to be the same as the group Y meningococcal polysaccharide fragment by base hydrolysis by at least 80% as claimed which is a Product by Process type claim (see *In re Thorpe*, 227 USPQ 964 (CAFC 1985); *In re Marosi*, 218 USPQ 289, 292-293 (CAFC 1983) and *In re Brown*, 173 USPQ 685 (CCPA 1972)). Consequently, the group Y meningococcal polysaccharide fragment by base hydrolysis by at least 80% of Chong et al is product by process because once a reference teaching product appearing to be substantially identical is made on the basis of a rejection and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to Applicants to show a distinction between the material, structural and functional characteristics of the claimed composition and the composition of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). Therefore the group Y meningococcal polysaccharide fragment does not patentably distinguish the claimed invention from the prior art.

Chong et al does not teach an immunogenic conjugate, wherein group Y meningococcal polysaccharide fragment is completely N-acetylated.

Jennings et al teach N-deacetylation of a meningococcal polysaccharide (see pg. 1708 Materials and Methods) coupled to a carrier protein (see abstract pg. 1709) which necessarily

teach an immunogenic conjugate, wherein the meningococcal polysaccharide fragment is completely N-acetylated.

It would have been prima facie obvious at the time the invention the was made to modify the immunogenic conjugate comprising a protein carrier and group Y meningococcal polysaccharide fragments that have been O-deacetylated as taught by Chong et al, wherein said polysaccharide fragments are completely N-acetylated by the N-acetylated process as taught by Jennings et al because the N-acetylated process allows the carboxylate and N-carbonyl groups of sialic acid residues of a polysaccharide to remain intact in an immunogenic conjugate in order to take advantage of inducing high levels of specific IgG antibodies (see Jennings et al abstract). KSR forcloses the argument that a specific teaching, suggestion, or motivation is required to support a finding a obviousness. See the recent Board Decision Ex parte Smith, --USPQ2d--, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007 (citing KSR, 82 USPQ2d at 1396) available at (**http://www.uspto.gov/web/offices/dcom/bpai/prec/fd071925.pdf**).

As to claims 1 and 16, to the limitation "use as a vaccine against N. meningitidis infection", "wherein the vaccine is adapted for administration by injection", said recitations are considered an intended use and thus is given no patentable weight on the conjugate. Therefore the claims are drawn to a conjugate.

One would have reasonable expectation of success because O-acetyl positive group Y meningococcal polysaccharide from Neisseria meningitides group type Y polysaccharide to produce an immunogenic conjugate is well known in the art.

Status of the Claims

5. No claims are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nina A. Archie whose telephone number is 571-272-9938. The examiner can normally be reached on Monday-Friday 8:30-5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner supervisor, Gary Nickol can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 1645

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